

from Mr. Busk's cabinet, the upper portion of the cement exhibits in places a very distinct transverse striation, resembling its perfect enamel: and in the tooth of a young calf the transition of the one structure into the other was well shown. The enamel and the cement, therefore, according to Mr. Huxley, are formed on the surface of the dentine, not by the "enamel organ," but in some way which he does not explain. Is it not possible, that not the epithelium, but the very membrane itself, is the agent?

In conclusion: the tooth-pulp being a protrusion of the dermic tissue of the gum, and the capsule an involution of the same, the reflected membrane is the analogue of the basement-membrane of the mucous lining of the mouth, and the "enamel organ" merely its epithelium, inclosed in the sac formed by the involution of the capsule.

The teeth, therefore, are true dermic structures, and are analogous to the hairs.

3. Development of the Blood-globules.—MOLESCHOTT¹ has lately been conducting a series of observations on the splenic and cardiac blood of frogs after excision of the liver. The first effect of excision of the liver is a striking diminution in the quantity of the blood, inducing a sort of chlorosis. The colourless corpuscles are much increased in relative quantity, the proportion in the cardiac blood being (average of many observations) 1 white to 2.24 coloured; while in healthy frogs it is 1 to 8. In the blood of the liver, the proportion was 1 to 5.88. The same diminution of the coloured corpuscles, after ablation of the liver, was observed also in the abdominal blood and in that of the "fat body." In the spleen, the quantity of the coloured corpuscles was found reduced by more than half, so that, in consequence of the smaller number (only about one-sixth) of coloured corpuscles naturally present, the quantity of colourless corpuscles under these circumstances exceeds that of the coloured.

From these experiments, it follows that the liver is an organ in which the conversion of colourless into coloured corpuscles goes on to a great extent.

Frogs deprived of the spleen show a slight increase in the relative proportion of the coloured to the colourless corpuscles. Frogs deprived of both liver and spleen present, in proportion to the colourless, four times fewer coloured corpuscles than in the natural state.

In the *conversion of colourless cells into coloured*, the author states that the nuclei separate into two or three smaller ones, and these into granules; the granules become coloured, and dissolve; and thus coloured cells without nuclei are produced. At the same time, the round form of the colourless is gradually converted into the elliptical one of the coloured. This change of form takes place sometimes before, sometimes after the cleavage of the nucleus.—*British and Foreign Medico-Chirurgical Review*, July, 1853, from Müller's *Archiv*, i. 73.

4. Structure and Function of the Spleen.—There are still numerous opinions almost constantly being advanced on the structure and function of this complicated organ. BUK² supposes that the colourless corpuscles of the blood which are to be changed into the coloured ones, are formed in it. This takes place by the passage out of the twigs of arteries ramifying on the Malpighian vesicles of an organizable lymph, which thus gets into the lymphatics. (He believes the Malpighian corpuscles to communicate with the lymphatics.) Here the first developed elements of the blood, the colourless corpuscles, are formed; part being transferred to the lymphatic vessels, and part to the veins. Thus the venous blood contains an important component not found in the arterial.

TIGRI,³ in a paper reprinted from an Italian medical journal, and written in order to vindicate his claim to priority over ASSON and KÜLLIKER, in their researches on the function of the spleen, reasserts, as the results of his micro-

¹ Müller's *Archiv*, 1853, i. 73.

² Illust. Med. Zeitung, Munich, 1852, vol. ii. No. 8.

³ Schiarimenti sulla struttura e sulla funzione della milza del Prof. A. Tigri. (Est. dalla Gazzetta Med. Ital. Toscana, tom. iii. ser. 2.)

scopic and other investigations on the spleen of men and animals, the following conclusions:—

The spleen is an organ which nature has destined to preside over the material composition of the blood. It receives into its vessels blood loaded with solid matters for elimination; these are the used-up epithelial cells and red globules, which are assimilated in it, and reduced into new principles of nutriment.

1. The anatomical elements of the spleen are blood and lymphatic vessels, to which are united the Malpighian corpuscles, the fibrous structure, the microscopic web, and the splenic fluid.

2. That it is not credible that the vessels of the spleen (looking at their size as compared with that of the organ) are destined only for its nutrition.

3. This is confirmed by observing that in other organs in which the blood has to undergo a modification there exist two orders of afferent vessels, *i. e.* the pulmonary and bronchial arteries for the lung, the hepatic artery and portal vein, for the liver.

4. Similarly, these two orders of vessels must be recognized in the spleen: the first comprises the nutrient vessels; the second, those which carry into the venous system the blood loaded with eliminable materials.

5. The special conformation of the splenic venous canal of ruminants, visible from the point of their entrance into the organ, has reference not only to the form of the canal, but also to the structure of its walls.

6. To the form, which is cylindrical, but irregular from hollows and projections, to which he gives the name of splenic productions.

7. To the structure, inasmuch as the parietes of the veins are formed by the red substance of the organ, together with a most subtle and transparent membrane, which divides it from immediate contact with the blood.

8. This membrane, organized like that of the capillaries, performs the office of a filter, and gives passage to the red globules of the blood, which are rendered inactive as well as the epithelial bodies.

9. This structure, so visible in the large venous trunks of the spleen of ruminants, is verified also in that of the horse, pig, and lastly, in the human spleen.

10. The communication between the arteries and veins of the second category, by the intervention of a capillary system, is effected by channels so ample as to permit the easy passage of bodies as large as the one-third of a millimetre.

11. The spleen pulp otherwise is not a dense liquid, but an assemblage of fusiform nucleated cells, involuted or folded on themselves, isolated nuclei, and red blood-globules, which elements are contained in a most delicate aricular web.

12. The presence of the Malpighian bodies is undoubted.

13. The structure of the spleen presents no resemblance to the cavernous bodies.

14. The microscopic web, with its areole, is in direct communication with the venous cavity, by the porosities of the stratum limiting the isolated or confluent splenic productions.

15. The same web is in communication with the lymphatics.

16. The epithelial bodies!! detached from the walls of the vascular system, and mixed with the circulating blood, are brought by the artery into the splenic tissue, in which there is every reason to believe that they are arrested.

17. The same happens to the worn-out blood-globules.—*British and Foreign Medico-Chirurgical Review*, July, 1853.

5. *Capillaries of the Liver.*—Mr. RAINER writes to the editor of the *Journal of Microscopical Science*, p. 231, as follows:—

"In the last part of Todd and Bowman's *Physiological Anatomy*, a doubt is expressed concerning the nature of the ultimate passages through which the blood circulates in the liver. Whether the smallest bloodvessels of this organ are true capillaries; that is, are possessed of a single tunic like other vessels of this description, or whether the blood passes along mere spaces or channels formed by the hepatic corpuscles, so as to be in actual contact with their cell-walls, is regarded by these authors as a question yet to be decided.

"Having at this time in my possession a portion of injected human liver, in which I have no difficulty in showing the smallest capillaries, and in demon-